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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,472	09/26/2005	Xiao Dong Chen	43238/317386	7795

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EXAMINER

PATEL, TAYAN B

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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12/21/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,472	Applicant(s) CHEN, XIAO DONG	
	Examiner Tayan Patel, Esq.	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/6/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5 & 13-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Duboust et al (US 2003/0116446).

Regarding claims 1-4, Duboust et al describes a method for electrolytic chemical mechanical polishing/cleaning of a substrate/electrode/component in a polishing station, 102, (See page 2, para 0024) comprising: the first electrode, 204, is disposed within a basin, 204, and has a reactive bias applied thereto to act as a cathode (See page 2, para 25); applying an electrolyte composition, 220, comprising phosphoric acid, to the component in the basin (See page 3, para 28; See also page 2, para 18); applying a bias from a power source, 200, applied to both electrodes with a current density (current is supplied due to the voltage) (See page 3, para 33); and applying, from a power source, 200 in conjunction with a controller, 140, a constant voltage for a first time period, then applying a constant reverse voltage for a second time period, and repeating

as necessary (the reversal of voltages causes an anode to act as a cathode, & vice-versa, which is accomplished in order to prevent cracking of the wafer) (See pages 3-4, para 33).

Regarding claim 5, Duboust et al describes the circulation of the electrolyte throughout the system (See page 4, para 35).

Regarding claims 13-15, Duboust et al describes an apparatus comprising a power source, 200 (See page 3, para 33); a connecting arrangement (depicted by dotted lines connecting the power source to the polishing system (See figure 1) wherein the first electrode, 204, is disposed within a basin, 204, and has a reactive bias applied thereto to act as a cathode (See page 2, para 25); applying an electrolyte composition, 220, comprising phosphoric acid, to the component in the basin/reservoir, 204 (See page 3, para 28; See also page 2, para 18); and applying, from a power source, 200 in conjunction with a controller, 140, a constant voltage for a first time period, then applying a constant reverse voltage for a second time period, and repeating as necessary (the reversal of voltages causes an anode to act as a cathode, & vice-versa, which is accomplished in order to prevent cracking of the wafer) (See pages 3-4, para 33).

Regarding claim 16, Duboust et al describes the circulation of the electrolyte throughout the system (See page 4, para 35).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6-12 & 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Duboust et al (US 2003/0116446) in view of Foreman et al (US 3119760).

Regarding claims 6-9, Duboust et al describes a method for electrolytic chemical mechanical polishing/cleaning of a substrate/electrode/component in a polishing station, 102, (See page 2, para 0024) comprising: the first electrode, 204, is disposed within a basin, 204, and has a reactive bias applied thereto to act as a cathode and the second electrode, 207, acts as an anode (See pages 2-3, paras 25-26); applying an electrolyte composition, 220, comprising phosphoric acid, to the component in the basin (See page 3, para 28; See also page 2, para 18); applying a bias from a power source, 200, applied to both anode and cathode with a current density (current is supplied due to the voltage) (See page 3, para 33); and applying, from a power source, 200 in conjunction

with a controller, 140, a constant voltage for a first time period, then applying a constant reverse voltage for a second time period, and repeating as necessary (the reversal of voltages causes an anode to act as a cathode, & vice-versa, in order to prevent cracking of the wafer by continuous polishing) (See pages 3-4, para 33). Duboust et al further describes an electrolytic cell (See page 2, para 24) but does not expressly discuss a bank of spaced metal objects.

Foreman et al describes an electrolytic cell (See column 1, lines 10-12) wherein spaced apart electrodes, 17, lie between two end plates, 10 & 11 (See column 2, lines 7-66; See also figure 1), in order to reduce and oxidate chemical compounds at the electrode surfaces (See column 1 lines, 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrodes spaced apart in Foreman et al in the method of Duboust et al in order to reduce and oxidate chemical compounds at the electrode surfaces.

Regarding claim 10, Duboust et al describes the circulation of the electrolyte throughout the system (See page 4, para 35).

Regarding claims 11-12, Duboust et al fails to describe a plurality of plates to function as the cathode and a further different plurality of plates to function as the anode, wherein the objects comprise plates of a heat exchanger.

Foreman et al describes the electrodes, 17, characterized as a plurality of anodes, 19 & cathodes, 20, each spaced from the other by equal distance in an alternating pattern (See column 2, lines 7-66; See also figure 1) wherein the objects are

plates (See column 3, lines 62-70) within a heat exchanger, 30 (the heat exchanger can be located either internally OR externally of the electrode pile, thus can conceivably comprise the electrode pile) in order to provide temperature control within the cell (See column 3, lines 55-61; See also column 4, lines 55-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of anodes and cathodes in an alternating pattern in a heat exchanger in Foreman et al in the method of modified Duboust et al in order to provide temperature control within the cell.

Regarding claim 17, Duboust et al describes an apparatus method for electrolytic chemical mechanical polishing/cleaning of a substrate/electrode/component in a polishing station, 102, (See page 2, para 0024) comprising: a connecting arrangement (depicted by dotted lines connecting the power source to the polishing system (See figure 1) wherein the first electrode, 204, is disposed within a basin, 204, and has a reactive bias applied thereto to act as a cathode and the second electrode, 207, acts as an anode (See pages 2-3, paras 25-26). Duboust et al further describes an electrolytic cell (See page 2, para 24) but does not expressly discuss a bank of spaced metal objects.

Foreman et al describes an electrolytic cell (See column 1, lines 10-12) wherein spaced apart electrodes, 17, lie between two end plates, 10 & 11 (See column 2, lines 7-66; See also figure 1), in order to reduce and oxidate chemical compounds at the electrode surfaces (See column 1 lines, 10-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the electrodes spaced apart in Foreman et al in the method of Duboust et al in order to reduce and oxidate chemical compounds at the electrode surfaces.

Regarding claim 18, Duboust et al further describes applying, from a power source, 200 in conjunction with a controller, 140, a constant voltage for a first time period, then applying a constant reverse voltage for a second time period, and repeating as necessary (the reversal of voltages causes an anode to act as a cathode, & vice-versa, in order to prevent cracking of the wafer by continuous polishing) (See pages 3-4, para 33).

Regarding claims 19-20, Duboust et al fails to describe a plurality of plates to function as the cathode and a further different plurality of plates to function as the anode, wherein the objects comprise plates of a heat exchanger.

Foreman et al describes the electrodes, 17, characterized as a plurality of anodes, 19 & cathodes, 20, each spaced from the other by equal distance in an alternating pattern (See column 2, lines 7-66; See also figure 1) wherein the objects are plates (See column 3, lines 62-70) within a heat exchanger, 30 (the heat exchanger can be located either internally OR externally of the electrode pile, thus can conceivably comprise the electrode pile) in order to provide temperature control within the cell (See column 3, lines 55-61; See also column 4, lines 55-64).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the plurality of anodes and cathodes in an alternating pattern

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in a heat exchanger in Foreman et al in the method of modified Duboust et al in order to provide temperature control within the cell.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tayan Patel, Esq. whose telephone number is (571) 272-9806. The examiner can normally be reached on Monday-Thursday, 8 AM-6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TBP



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SUPERVISORY PATENT EXAMINER